

Knowledge, Attitude and Practice Regarding Ankyloglossia in Children among Undergraduate Dental Students. - A Questionnaire Survey

Research Article

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Abstract

Ankyloglossia or tongue tie is a congenital anomaly in which lingual frenulum is attached to the tongue and restricts its normal movements. This hinders normal functions and affects the quality of life. Though there are conflicts in the management of this anomaly, diagnosis is essential at an earlier age. Hence, this study is to analyse the knowledge and attitude of ankyloglossia in children among dental undergraduates. A questionnaire study was conducted among randomly chosen 100 undergraduate dental students. It consisted of questions regarding the knowledge, attitude and practice regarding ankyloglossia in children. The data was collected and analysed through IBM SPSS statistical analysis. Descriptive statistics were done. Percentages and frequencies were calculated and to test difference among variables chi square test was done with a p value <0.05 considered statistically significant. In this study, about 96% of the students reported to know about ankyloglossia. Among them, only 57% have reported to come across a patient with ankyloglossia. Only 70% of the students have been checking ankyloglossia during clinical examination in every patient. About 79% of the students were aware of the treatment measures. Hence, this study concludes that dental undergraduates had adequate knowledge on ankyloglossia within children.

Keywords: Ankyloglossia; Tongue Tie; Dental Undergraduates; Breastfeeding; Children.

Introduction

A frenulum is a small muscle, which is covered by a mucous membrane and attaches the lips and tongue to the bones of the mouth. Occasionally, considerable variations can occur in normal shape, position of frenum [1]. The main function is to keep the lips and tongue in harmony with the growing bone of the mouth during foetal development. The tongue is usually short or even has a bifid tip during birth with frenulum extending to the tip. Eventually, it gets receded within 6 months to 6 years of life. Persistence of this lingual frenum causes an anatomical abnormality called Ankyloglossia [2].

Ankyloglossia otherwise referred to as tongue tie, is a congenital anomaly which may decrease the mobility of the tongue. It is characterised by an abnormally short, thickened or tight lingual

frenulum connecting the underside of the tongue to the floor of the mouth [3]. Ankyloglossia varies in degree of severity from mild cases presented with mucous membrane bands to complete ankyloglossia in which the tongue is restrained to the floor of the mouth [4].

Though ankyloglossia is uncommon, it's not rare. Ankyloglossia can cause various problems such as difficulties in breastfeeding, speech impediments, poor oral hygiene and being embarrassed by peers during childhood and adolescents [5].

Ankyloglossia can be treated by frenectomy where the frenulum is cut off with or without the consciousness by using local anaesthesia [6]. These are usually performed by dentists, with quick procedures which may rarely cause serious complications such as scarring, infections etc [7].

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There has been a controversy going on in the diagnosis and treatment of ankyloglossia. Though there is an increase in the number of frenectomy procedures, there are still variations in the outcome of the treatment. Untreated ankyloglossia can cause breastfeeding problems, due to the difficulty in latching, sucking and swallowing. This results in loss of protective immunity for the child which may even cause cognitive loss [8].

Hence detecting ankyloglossia in the early stage of the child's life is the primary step in the further management, either surgical or psychological approach for improving the future of the child. Dental undergraduates play a vital role in the detection of ankyloglossia as they may come across such anomalies, when they clinically evaluate every patient. Knowledge and treatment measures should be well versed among dental undergraduates for the management of ankyloglossia. Only limited studies have been done among dentists regarding the awareness of Ankyloglossia.

Previously our team has conducted numerous cross sectional studies [9-13], clinical trials [14-18], *in-vitro* studies [19, 20], case studies [21] and literature reviews [22, 23] over the past 5 years. Hence, this time, an attempt has been made to evaluate the knowledge, awareness and attitude of dental undergraduates studying at a University in Chennai regarding the ankyloglossia in Children.

Materials and Methods

Study Design

A cross sectional questionnaire based study was carried out among dental undergraduates of a University in Chennai who are practising in clinics.

Sampling

This study was conducted in an online setting. A total of 100 dental undergraduates were chosen. Simple random sampling methodology was employed, till the sample size was achieved.

Inclusion Criteria

Randomly selected students who are practising in clinics, till the sample size was achieved.

Exclusion Criteria

All the postgraduates and students who were not attending any clinics were excluded.

Those who were not willing to participate were excluded too.

Approval

Informed consent was obtained from all the participants before conducting the study. Ethical clearance was obtained from the Institutional Ethical Committee and Scientific Review Board of the University.

Questionnaire

A standard questionnaire was prepared. It was validated through

conducting a pilot study among the subset of the study population. It is then mailed to randomly chosen 100 dental undergraduates. The questionnaire consisted of 3 parts. The first part of the questionnaire consisted of participants' data such as age, gender, year of study for the identification purpose. The second portion consisted of questions regarding their knowledge of ankyloglossia and its effects on patients. The third section consisted of questions regarding their attitude and practice towards clinical examination and treatment measures. The positive response came from all the students with the response rate of 100%.

Statistical Analysis

The data from their response were entered in the excel sheets. The analysis was done using SPSS software through frequency tests and Chi-square tests.

Results and Discussion

Out of 100, 35 males and 65 females participated in this study (Table 1). All the participants belong to the age group ranging 19-24 with the mean age of 21.64 (Table 2). Among them, 18% were 3rd years, 20% were final years and 64% were interns who are studying and practising in the clinics (Table 3). In this study, 96% were aware of ankyloglossia (Graph 1) and 85% of the participants were aware that it is a congenital anomaly (Graph 2). About 87% of the students are aware of its effect in interfering breast feeding (Graph 3) and 85% aware about its effect in affecting speech of the child (Graph 4). Among them, 80% of the students were aware of the treatment measures of ankyloglossia (Graph 5). In this study, among 100 students, only 57% of the students have come across a patient with ankyloglossia (Graph 6). About 70% of the participants reported that they check for tongue tie in every patient during clinical examination (Graph 7). About 85% of the students reported that tongue tie should be treated at an earlier age (Graph 8). About 79% of the students agreed that this ankyloglossia in children causes psychological problems (Graph 9) and about 82% of the students reported that if ankyloglossia left untreated may cause eating difficulty in children (Graph 10) In this study, about 51% of the students strongly agreed and about 39% of the students agreed it is inevitable to check for abnormalities in every dental checkup (Graph 11). In this study, 100% of the male students gave positive responses and no negative responses were reported. About 6.15% of the negative responses were noted among females students, however this finding was not statistically significant (Graph 12). There was no significant difference in the knowledge among students of different years of study and with gender (Graph 13).

Tongue tie has been a much debatable topic due to various effects in the children with or without the treatment. Dentists along with pediatricians, otolaryngologists and lactation consultants plays a vital role in the diagnosis and management of ankyloglossia. The knowledge and awareness of ankyloglossia in children and its effects should be well versed among dentists. Hence this study was conducted among dental undergraduates who in the future get to treat patients with any other abnormality in the oral cavity.

In the present study, 96% of the students were aware of ankyloglossia and among them, 85% of the participants were aware about its congenital origin. Ankyloglossia occurs with increased

Table 1. Distribution of study population based on gender.

	Frequency	Percent
Male	35	35
Female	65	65
Total	100	100

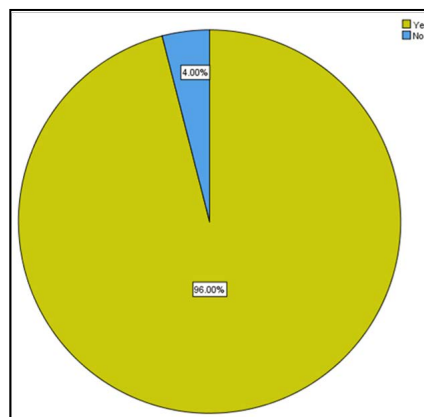
Table 2. Distribution of study population based on age.

	Frequency	Percent
19	3	3
20	16	16
21	15	15
22	47	47
23	18	18
24	1	1
Total	100	100

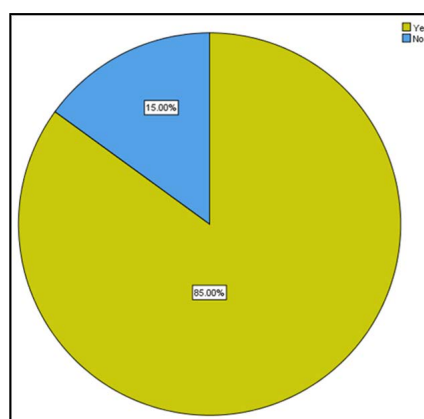
Table 3. Distribution of study population based on year of study.

	Frequency	Percent
3rd	17	17.0
4th	19	19.0
Intern	64	64.0
Total	100	100.0

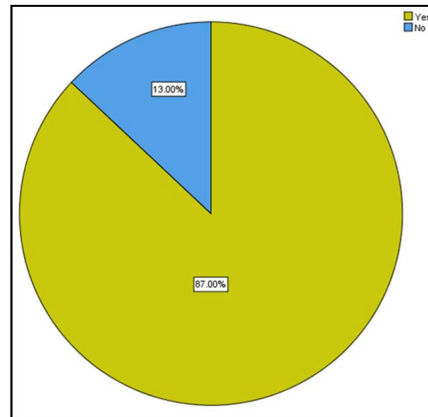
Graph 1. Pie chart showing the distribution of the study population who were aware of ankyloglossia. About 96%(yellow) were aware of ankyloglossia and 4%(blue) gave negative responses.



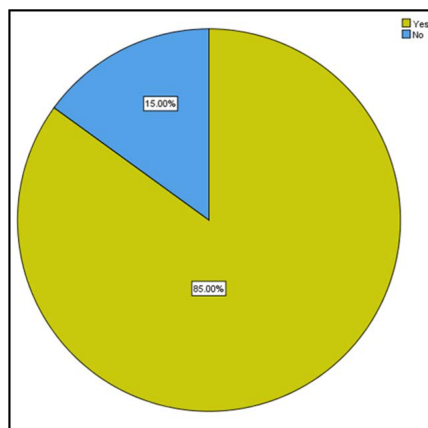
Graph 2. Pie chart showing the distribution of the study population who were aware that ankyloglossia is a congenital anomaly. About 85% (yellow) of students gave positive responses.



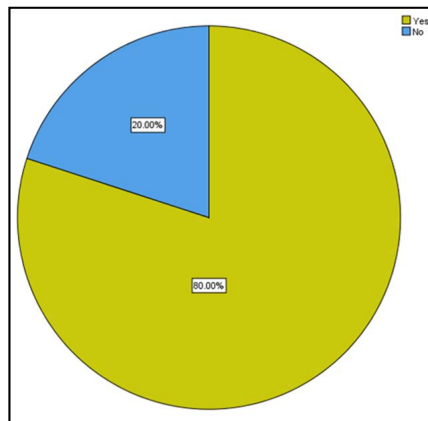
Graph 3. Pie chart showing the distribution of the study population who think ankyloglossia could interfere with breast-feeding. About 87%(yellow) of students gave positive responses.



Graph 4. Pie chart showing the distribution of the study population who think ankyloglossia could cause speech abnormality. About 85%(yellow) of students gave positive responses.



Graph 5. Pie chart showing the distribution of the study population who were aware of the treatment measures of ankyloglossia in every patient. About 80%(yellow) of students gave positive responses.



rate in various congenital syndromes such as orofacioglossal syndrome, Simpson-Golabi-Behmel syndrome, Opitz syndrome, Beckwith-wiedemann syndrome, X-linked cleft palate [24].

In this study, 87% of the students were aware of the effects of tongue tie interference with breastfeeding. An infant with ankyloglossia has the difficulty in latching onto the nipple resulting in compression of the nipple against the gum pad which can lead to nipple pain. This may lead to switch feeding through bottle [25].

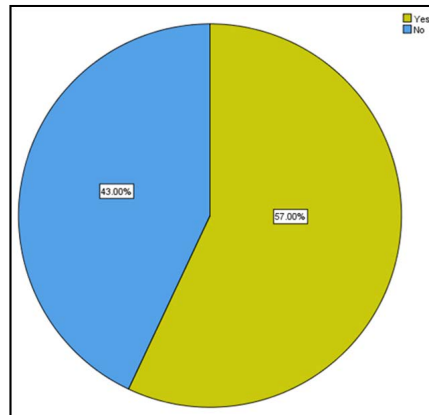
In this study, 79% of the undergraduates agreed that this anomaly in children causes psychological problems and 82% of the students reported that the children with ankyloglossia will face dif-

iculty in eating food. A case study by Baxter et al., [26] reported that a child with ankyloglossia appeared shy and lacking confidence in communication with others and experienced selective eating and gagged on foods on various textures.

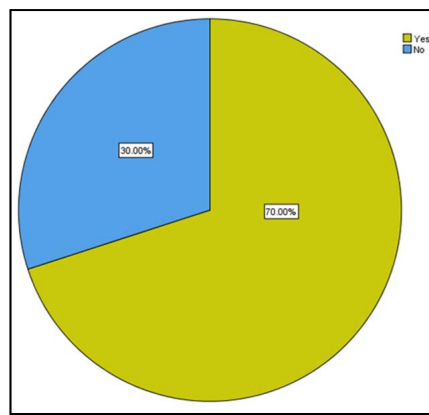
In the present study, 57% of the students have come across patients with ankyloglossia. Previous studies reported incidence vary widely from 0.02 to 5% [25]. It is more prevalent among neonates as the milder ones might get resolved with growth [27]. Messner et al [28] reported higher prevalence in males with a ratio of 3:1.

About 80% of the students were aware of the treatment measures for ankyloglossia and 85% reported that it should be treated at an

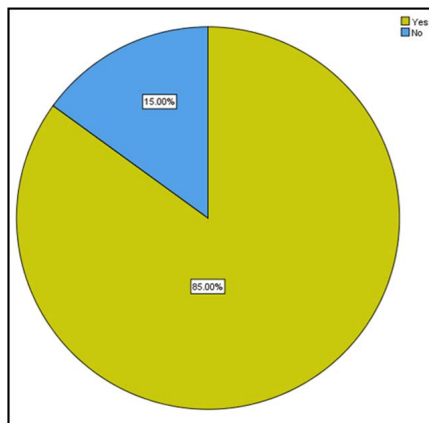
Graph 6. Pie chart showing the distribution of the study population who have come across a patient with ankyloglossia. About 57%(yellow) of students gave positive responses.



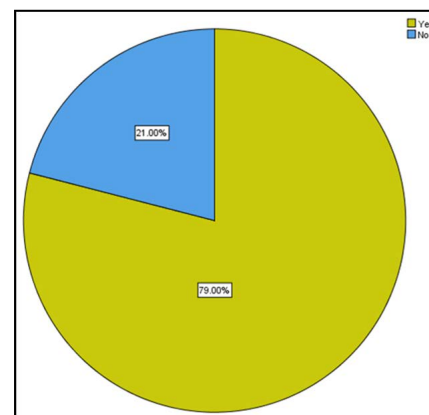
Graph 7. Pie chart showing the distribution of the study population who check for ankyloglossia in every patient. About 70%(yellow) of students gave positive responses.



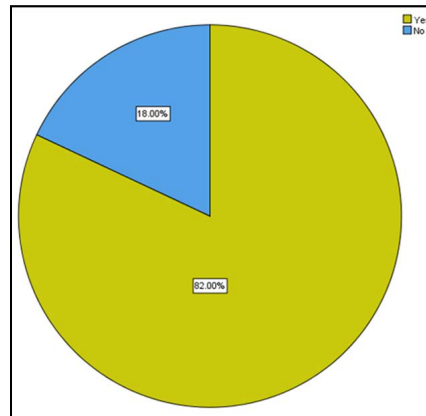
Graph 8. Pie chart showing the distribution of the study population who think ankyloglossia should be treated at an earlier age. About 85%(yellow) of students gave positive responses.



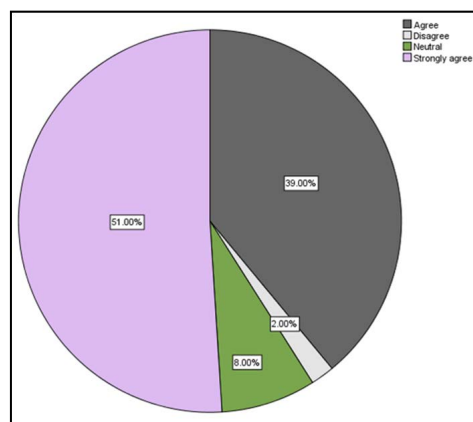
Graph 9. Pie chart showing the distribution of the study population who think patients with untreated ankyloglossia may have psychological problems. About 79%(yellow) of students gave positive responses.



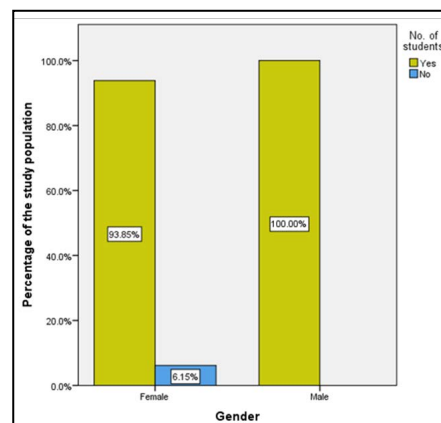
Graph 10. Pie chart showing the distribution of the study population who think ankyloglossia could cause eating difficulty. About 82%(yellow) of students gave positive responses.



Graph 11. Pie chart showing the distribution of study population who think it's inevitable to check for anomalies in every patient during clinical examination. About 51%(pink) strongly agreed and 39%(grey) of the students agreed to this statement, however 2%(white) disagreed.



Graph 12. Bar chart showing the association of gender and awareness regarding ankyloglossia. X-axis shows the gender distribution and Y-axis shows the percentage of students responded. Among 35 males who had participated in this study, 100%(yellow) of the students gave positive responses and no negative responses were reported. About 6.15%(blue) of the negative responses were noted among female students. There was no significant difference in awareness regarding ankyloglossia between males and females. (Chi square test; $\chi^2 = 2.244$, $df=1$, $p\text{-Value} = 0.134$ (>0.05 not significant)).



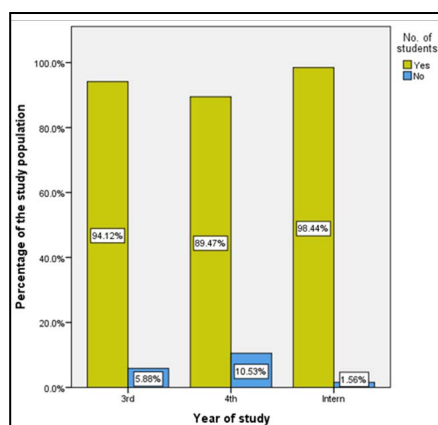
earlier age. A study by Jin et al., [29] reported variation between health care professionals in the treatment of ankyloglossia. This is due to varied and unclear outcomes in the treatment of ankyloglossia and its increased complications like damage to the anatomical structures. However, the untreated child may face various problems including speech, breastfeeding difficulties and it even affects the dentition with the need of orthodontic management.

Though few reports suggested the mechanism of breastfeeding

in children with ankyloglossia is unclear, a study by Messner et al reported significant association between ankyloglossia and breastfeeding and concluded that there is a significant improvement in breastfeeding of children who had undergone surgical interventions. Dentists (35%) who participated in the study by Jin et al., [29] reported ankyloglossia as the cause of lactation difficulties.

In the present study, 85% of the students were aware of its effect in affecting speech of a child with ankyloglossia. Limited move-

Graph 13. Bar chart showing the association between year of study of undergraduate and awareness regarding ankyloglossia. X-axis shows the year of study and Y-axis shows the percentage of students' responses from each year. Higher number of interns reported being aware about ankyloglossia compared to other years (98.44% - yellow), however which was statistically not significant. (Chi square test; $\chi^2=3.255$, $df=2$, $pValue=0.196(>0.05)$).



ment of the tongue for the increased period during childhood would affect the speech of the children. A study by Dollberg et al., [30] concluded that children who underwent frenectomy showed fewer articulation problems compared to the untreated children. But that study reported insignificant difference in the fluency and speech outcomes after the surgery. However Messner et al., [31] reported significant improvement in tongue mobility, protrusion, elevation and speech outcomes in his prospective study. A study conducted by Walls et al., [32] among the parents whose children underwent neonatal frenectomy concluded that improved speech outcomes and oral motor activities compared to individuals that declined surgical interventions. This is in accordance with the study conducted by Lalakea et al., [33] who reported similar findings. A study conducted by Qazi et al., [34] stated that 85% of dentists experienced alteration in the speech among patients with ankyloglossia.

In the present study, 70% of the students reported to check for ankyloglossia in every patient and 85% of the students agreed that it is a mandatory check for every other abnormality during the routine examination of the patients. Tongue is an important oral structure that affects speech, position of teeth, periodontal tissue, nutrition, swallowing, nursing and certain other social activities. Hence, it is important for the dentists to regularly check for any abnormalities of the tongue and other oral structures regardless of its management.

An intervention is needed to improve the early detection of ankyloglossia due to its deleterious effect on the child's quality of life. Hence, evaluating the knowledge, awareness and attitude of dentists about ankyloglossia, is a key step towards improving its management. Evaluating those data can immensely help in prevention and early diagnosis. The implementation of preventive measures such as dental counselling and social awareness programs will help to reduce delayed detection and its effects on child's life. Based on the findings of this study, it can be concluded that the few dental undergraduates still lack sufficient knowledge and awareness regarding ankyloglossia in children. Their knowledge and attitude towards the ankyloglossia should be improved and updated to enable them to assess early diagnosis and provide treatment for this anomaly.

Limitations

The main limitation of this study was limited sample size and it was confined to limited geographical locations. For further scope of the study increased sample size with inclusion of larger geographical location would give better results.

Conclusions

Ankyloglossia affects a considerable number of infants and children. It is important for the dentist to get accurate information regarding its procedure and complications. In this study, majority of the students were found to have adequate knowledge and awareness of its effects, but however, a small group of the population were found to be unaware and didn't have enough knowledge about ankyloglossia. Future actions with a view to improve the knowledge and practice of dental students concerning the management of ankyloglossia seems to be needed.

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